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**CLAIMS**

1. A device for reading fluorescent signals comprising:  
an illuminator for illuminating a material bound with a fluorophore,  
5 at an appropriate wavelength to induce fluorescence;  
a detector for detecting fluorescent signals emitted by the material;  
a signal processor for processing the signals detected;  
the device defining an optical system having an excitation optical  
path and a detection optical path;  
10 characterised in that the illuminator comprises a light emitting diode  
that illuminates the material with incoherent illumination;  
the material comprises a microarray assay comprising a plurality of  
microspots; the material is deposited on a substantially flat surface and the  
illuminator simultaneously illuminates all, or a substantial portion of one of  
15 the microspots.
2. A device according to Claim 1 further comprising an excitation filter  
positioned in the excitation optical path to filter out longer wavelengths  
emitted by the LED before they reach the material to be analysed.  
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3. A device according to Claim 2 wherein the excitation filter  
comprises a short band pass interference filter.
4. A device according to any one of the preceding claims further  
25 comprising an emission filter positioned in the detection optical path to  
filter out any directly reflected illumination from the material.

5. A device according to any one of the preceding claims wherein the substantially flat surface comprises a glass slide.

5 6. A device according to any one of the preceding claims further comprising a polarising filter positioned in the excitation optical path to be perpendicular to the input polarisation, and  
a second polarising filter positioned in the detection optical path and orientated at right angles to the first polarising filter such that the two filters  
10 comprise crossed polarisers positioned in the excitation and the detection optical paths respectively.

7. A device according to any one of Claims 1 to 5 further comprising a polarising beam splitter positioned to lie in both the excitation and detection  
15 optical paths.

8. A device according to any of the preceding claims wherein the signal processor comprises a phase sensitive detector.

20 9. A device substantially as hereinbefore described with reference to the accompanying drawings.

10. A method of analysing signals emitted from a sample of material bound with a fluorophore, the method comprising the steps of:

25 illuminating the sample at an appropriate wavelength to cause fluorescence in the sample;

detecting fluorescent signals emitted by the sample once the sample has been illuminated;

analysing signals detected by the detector,

characterised in that the sample is illuminated with incoherent illumination using a light emitting diode (LED), the material comprises a  
5 microarray assay comprising a plurality of microspots; the material is deposited on a substantially flat surface and in that all, or a substantial portion of one of the microspots is illuminated simultaneously.

11. A method of analysing signals emitted from a sample of material  
10 bound with a fluorophore using a device according to any one of Claims 1 to 10.

12. A method substantially as hereinbefore described with reference to the accompanying drawings.